



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/805,990	03/14/2001	David A. Engler	M507.12-0017	3800
32692	7590	07/27/2005	EXAMINER	
3M INNOVATIVE PROPERTIES COMPANY			DINH, DUC Q	
PO BOX 33427			ART UNIT	
ST. PAUL, MN 55133-3427			PAPER NUMBER	
			2674	

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/805,990

Applicant(s)

ENGLER ET AL.

Examiner

DUC Q. DINH

Art Unit

2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19, 21-28, 21-49 is/are pending in the application.
- 4a) Of the above claim(s) 19, 21-28, 31-41 and 49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 42-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Applicant's election without traverse of claims 1-18 and 42-48 in the reply filed on April 21, 2005 is acknowledged. An Office Action is provided as follow.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 18 recites the limitation "the supporting structure" in line 2. There is insufficient antecedent basis for this limitation in the claim.

#### ***Claim Objections***

4. Claim 14 is objected to because of the following informalities:

Line 2, "the rest of the support the substrate" should read "the rest of the support substrate".

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-18 and 42-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridon (U. S. Patent No. 5,917,646) in view of Richley et al. (U. S. Patent No. 6,348,908), hereinafter Richley.

In reference to claims 1 and 13 Sheridan discloses in Fig. 2 a display interact with electrical wave by changing optical state in selected area in response to external signal comprising: a plurality of optical responsive elements, balls 21, capable of presenting at least two optical state based on applied external signal; a support substrate 22 containing balls 21 and having a surface structure which defines receiving positions balls 21; an array of transparent lenses 27, at least a part of each lens 27 being in direct contact with the surface substrate 22. Sheridan does not disclose the display elements changing optical aspect when interact with electromagnetic wave. Richley discloses a gyration 400 in Fig. 4 changing the optical state of the display element by applying electromagnetic waves as claimed.

It would have been obvious for one of ordinary skill in the art at the time of the invention was made to learn the teaching of Richley, i.e.: using the electromagnetic to change the state of the display particles, in the device of Sheridan for provide flexible energy to provide necessary driving signals for applying an electric field to the display (Fig. 4, col. 5, lines 12-22).

Sheridan discloses in Fig. 1 the electrode 14a closest to viewing surface 15 is preferably transparent. An observer at I sees an image formed by the black and white pattern of the balls 11 as rotated to expose their black or white faces (hemispheres) to the viewing surface 15 of substrate 12.

In reference to claim 3, refer to the rejection as applied to claim 1 relating for the electromagnetic field.

In reference to claims 4-5, Sheridan discloses the spherical rotating balls 21 in Fig. 2 as claimed.

Art Unit: 2674

In reference to claims 6, Sheridan discloses eggcrate substrate structure during fabrication as claimed in three dimension in Fig. 12.

In reference to claims 7-9, Sheridan discloses that each lens has a focal lens and each particles ball 21 has a portion imparting a visual state, the portion being positioned within the focal length from the associated lens, and each lens being contact with the top of the receiving portion (Fig. 2 and 5-6).

In reference to claims 10-11, Sheridan discloses in Fig. 11 the lens array 110 is laid across the substrate after balls 21 are placed in the substrate.

In reference to claim 12, Fig. 11 A wherein each lens enlarge image of at least portion of the ball position below the lens by refracting the light reflected therefrom.

In reference to claim 14 Sheridan discloses the structure of the support substrate in Fig. 14 comprising an opaque cover plate bonded to the rest of the support substrate.

In reference to claims 15-17, Fig. 15 shows each cavity contains only one ball and filler material such as fluid is provided surrounding the ball (col. 15, lines 34-50).

In reference to claim 18, Fig. 15 shows a top cover 159 laid across the supporting structure as claimed.

In reference to claim 42, refer to the rejection as applied to claim 14.

In reference to claim 43, refer to the rejection as applied to claims 4-5.

In reference to claims 44-46, refer to the rejection as applied to claims 7-9.

In reference to claims 47, refer to the rejection as applied to claim 10-11.

In reference to claim 48 refer to the rejection as applied to claim 12.

Art Unit: 2674

***Conclusion***


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DUC Q DINH whose telephone number is (571) 272-7686. The examiner can normally be reached on Mon-Fri from 8:00.AM-4:00.PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edouard Patrick can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DUC Q DINH  
Examiner  
Art Unit 2674

DQD  
July 25, 2005

  
PATRICK N. EDOUARD  
SUPERVISORY PATENT EXAMINER